

**U.S. Army Corps of Engineers  
Lewis and Clark Lake Sediment Management Study  
Informational Agency and Public Meetings  
Best Western Kelly Inn, Yankton, South Dakota  
June 14, 2007**

**Summary of Comments from Meetings**

The U.S. Army Corps of Engineers held two meetings to provide information and to gain input on the Lewis and Clark Lake Sediment Management Study. The goals of the study include:

- Develop modeling tools that will allow for analysis of most upstream and downstream flow and sediment transport scenarios;
- Design a test flow that would verify the model (though a physical test is not part of this study); and
- Draw conclusions about the viability of the flow alternatives modeled.

Agency representatives and attendees at the meetings were asked to provide oral and written input on possible management scenarios attendees would like the Corps to examine and preferred results of sediment management efforts. The Corps plans to use the input received at these meetings to develop possible sediment management solutions for analysis.

The following reflects a summary of oral comments provided at the agency and public meetings. Written comments received are identified as such.

***Agency meeting, 1 to 4 p.m.***

- Will a study be conducted on how the flush would affect water quality?
- Our intake is less deep than others, and flushing will take away our water.
- What is the goal of the study? How is success defined? What is Corps' primary objective? What do you want to accomplish? Is it navigation? Is it maintaining storage volume?
- This effort will not work unless you use Dr. Coker's project.
- You will need to address how far you can draw the reservoir down before it has environmental, recreational and other effects. You would have to time a big flush carefully around recreation and species considerations.
- The potential impacts also depend on when you do the drawdown; it probably should not be done in winter, as this affects water quality.
- What are the options to water districts if we're out of water [because of a drawdown]?
- Even if it is feasible is it socially acceptable?
- You could move some sediment but how far will it move?
- It seems the Corps is trying to drop water levels enough to avoid dealing with the repair of Highway 12. It seems you don't want to do the Highway 12 project.

- We know the delta is good for fish and wildlife. We don't want to see it carved into a few channels. We would like to see some things not destroyed. I understand the need to manage sediment but don't want to destroy fishery resources at Lewis and Clark Lake. Fishing is very popular here; it is an economically advantageous and important fishery.
- It sounds like the Corps is looking at this model for a drawdown. I would like you to consider an alternative that would not involve a drawdown and destroy the fishery. I would like to see a steady supply of sediment beyond the dam. I realize with a big flush we will have degradation and bank erosion problems. Hopefully when we get to NEPA those issues will be ironed out.
- People in Nebraska did not know about the public meeting. Anglers did not know about it. We saw a blip in the paper last night that did not provide details. If you hold a public meeting in the future, contact me and I'll make sure it is publicized.
- Success would be: not destroying the delta. Dr. Coker's project can be done. It uses a one-foot wide pipe. It's very feasible. It will take sediment and move it downstream. How seriously will you consider his work?
- I was told that when we had a flood, chunks of sand were gone and deposited in the lake. It would have been nice to know the velocities needed for pushing that sediment.
- If you go through this process and in 2009 we determine these options will not work, are we back to square one?
- How do you propose to verify the model using data from 1985 and 2007 if you have not seen any sediment below Gavins Point? Can you validate the model?
- All the data you're collecting is geared toward a flushing event, but you said you want to look at other alternatives. Will the data you collect be broad enough to apply to different alternatives?
- What can we predict downstream for sediment? Will we get information sufficient to know what we would move through the dam, retention times and other factors that may affect biology?
- Aside from the model, what information are you collecting about sediments, so we know the sediment composition and what is currently in the delta?
- It would help know what a flush would help or impact. I'm interested in what we might be moving and how that will impact species. We don't want to dump fine silt on sturgeon habitat. We could support certain species with certain types of sediments. I'm interested in the information from these surveys, especially the volume and type of sediment that may affect species.
- I'm concerned about the delta moving west. We're raising the water surface. The delta reach area is important for native species, especially for paddlefish spawning. I'm concerned that as the water elevation rises in the confluence, we are making the area more lake-like. The last six years have been the lowest production years since 1965. I'm concerned about the west

side of the delta and with changes that would make it difficult for the river to function. Paddlefish have been impacted since the 1980s. The river is not in good shape in terms of pallid sturgeon, but we have hope that this reach might help pallid sturgeon recovery. The end state should be to return the area to its state 10-15 years ago, with lower surface elevations and lower groundwater levels.

- Will the model have the capability in one dimension to tell us where sediment will be picked up and transported?
- What areas will be included in the study?
- If I want to know what is happening at each mile, can the model do that?
- Can you define unsteady flow routing?
- Many people doing restoration are looking to the Mississippi to provide sediment to build up Louisiana coastal area. They want 30 to 40 percent of the sediment to arrive naturally. There are ways to move sediment from the Mississippi. If we can move some sediment along the way it would help the mitigation project. It can also be used to connect wetlands along the river.
- Can the model tell me how much sediment is building up at a particular intake and when the sediment would reach the intake?
- Will the model predict a certain volume past a certain point to know what cubic feet per second (cfs) volume pushes certain sediments?
- I would suggest explaining before the public meeting what the model inputs are and what the model will actually do.
- How broad of a spectrum are you using for flows and other factors?
- At one time the river associations preferred flushing; at another time we realized the impacts may not justify flushing. We're more for Dr. Coker's idea right now.
- Would the model look at lowering water surface elevation? Flows could maybe be used to reset baseline conditions. Can we tell you what water surface elevations we would like to see in the end?
- From a lake management standpoint, an end goal would be to maintain deep water in the reservoir. The diversity in these areas is what makes it good. Depth is important to paddlefish, for example. Diversity is essential. Lewis and Clark Lake is a good fishery now. My fear is that lake will fill in to less than 28 feet and, if so, that would spur a monoculture. We can't maintain a future in a sluicing lake. We won't reach a good carrying capacity if we draw down the lake by 80 percent.
- Consider the downstream and upstream property damage from a flush. We would want to keep river flows inside the banks.

***Public Meeting, 6 to 9 p.m.***

- The estimation of sediment travel is wrong; it won't move as fast as the Corps estimates. Cattails and other vegetation will slow the sediment movement. The delta is the best thing to happen to wildlife in the area. I don't think the area should be modified for boating. Leave the current sediment. The water level has risen and cannot be kept completely open. I propose to drop the lake six feet and to keep sediment and vegetation growing to the water's edge to create a faster moving channel. Don't do too much to the end of the lake. I'm glad to see people are taking interest in the river.
- Include the area above the Niobrara and Ponca Creek deltas in this study. Much has been invested in these areas, and they are beginning to see the impacts of backwater. Those homes will be impacted by doing nothing. We should at least maintain the status quo; don't let the sedimentation process continue.
- I agree on maintaining the status quo. I don't understand the flushing process; it seems vague. How much change in water level does this mean? More than six feet of change will adversely affect boating and marinas.
- The fact sheet lists what previous studies have suggested. I don't see anything to address more sediment from Niobrara. If 60 percent of the sediment comes from the Niobrara River, is anything being done to mitigate this?
- My house is just below the dam. I have seen natural channelization and natural sedimentation. The Corps has already experimented with flushing. If you flush something in one spot, it will be deposited somewhere else. Where will the sediment go? I'm concerned about the river.
- I'd like the Corps to consider equally the river and the lake.
- If you are studying this alternative, the Corps should also consider other alternatives.
- The Corps did have a feasible project to dredge the area. Has anyone considered the dredging proposal?
- If you flush the river, you will have to increase the flows considerably. Will you reimburse me for my losses?
- I'm concerned about water intakes, water quality, and keeping sand deposits away from intakes.
- Dr. Yang's model should have studied sediment movement more.
- Congratulations to the Corps on starting to do something on this issue. Thank you for acknowledging this problem. Whatever you do must meet a cost-benefit ratio. If you must complete a ratio, we need to look at the fact that dams generate benefits every year. If we don't address all the reservoirs we will lose these benefits.
- Capturing sediment before it enters lake area can be done over several years through dams and channeling. If you study flow from Niobrara and capture sediment before it reaches the

lake by a dam connected to a pipe through the lake, sediment can be redirected to below the dam.

- I never thought we'd see this sedimentation. I applaud the Corps for attempting to do something to slow sedimentation. I would suggest the Corps have all players on board. Past projects have been affected by not getting everyone on board. Make sure you talk to all the agencies that may be affected. Someone needs to be in charge. If you need anything done at state level let us know; we are willing to help and have visited with the Corps on numerous occasions. We will do whatever we can within our scope to make it a realization.
- Do you have records of channelization changes during the high water years from 1996 and 1997 and how long it lasted? There were areas that were two to three feet deep with 16 to 17 foot water channels. Now it is two to four feet deep. The flushing then did some good.
- Flooding has been controlled, but sedimentation must be addressed. On the Niobrara River, one side is dirty and one side is clear. Something has to be done.
- I've seen the river change over the years; it has changed a lot. Our property size has doubled because of water level changes. Wildlife has changed; sometimes it has gotten out of control. I've been hearing what will happen to the fish. People who fish see a fluctuation from 8,000 to 16,000. The walleye don't have a chance to spawn. Have you considered these impacts? What will this do to the environment?
- Flushing will require more water. We're in the tenth year of a drought. Where will the water come from?
- I would like to see river managed as it has been in recent years – as a natural river for fishing, gaming for ducks and geese, and recreation. If you're talking about getting rid of sediment, you would change the water area; we don't need any more water area. This isn't a big storage lake anyway; it is more of a control lake. I don't think 23 percent storage loss is much compared to the whole system. We would not like the water to drop six feet because we have so little water already at the marina. We would like to see it maintained as it is now. I like the channelization aspect to navigate from the lake to Niobrara or Springfield. I understand your goal is to get rid of the sedimentation; but I'm not sure there is a need to get rid of it. If you can create ways through the area you'd have navigation.
- The fish and recreation opportunities in the delta are different than in a lake but are still important. The Corps needs to look at the effects of rapid water increases or decreases on fisheries.
- Sixty percent of the sediment comes from the Niobrara River. Whether we dredge or flush, will we ever do a study of what we can do through small watershed projects? I would like to see something done about that. Let's emphasize soil and water conservation; hold the water and soil where it is. You will flush the sediment and make room for more.
- It's hard to believe the Corps has never done a flushing project and is starting from scratch. Also, I don't think my house will be worth much if it turns into a duck pond.

- We were hoping tonight that you would tell us what you're doing instead of hearing about more studies. In 1986 we could not use speed boats in the area. It is sad that you're taking this long to do something about this.
- I'm interested in what the model is. Is it a computer model?
- I would like to see a study about making use of sediment here. If we send it downstream it will cause them problems. Maybe use wind or hydropower to separate particles. Sediment has value and could be used here.
- I'm concerned whether you will be able to move organic matter downstream for species. Some things are being done upstream in the watershed; more needs to be done. I'm glad to see you're doing this, but we need to look at more than just this alternative.
- In addition to water quality, degradation of the channel has created expensive intake issues. Finding a solution will be expensive. A goal should be to stop degradation of the channel.
- I'd like to see more rocking on banks or allowing people who live there to rock banks to prevent erosion. We've lost 100 feet of ground in the area. It will keep getting worse if you don't start doing more rocking.
- During studies in early 2000s, I heard that the cost-benefit ratio never considered the value of recreation or property. Those are two factors that describe what the lake means to the economy of the area. Upstream impacts must be included in addition to direct impacts. Don't take these benefits for granted. The lake contributes millions of dollars to the local economy.
- I've been watching the emergent sandbar project; can you take sediment from the center of the lake and create stable shorelines? It seems the transportation of sediment will be the biggest thing to overcome. If you can limit the distance to move the sediment, then along the shoreline you could create a state park of considerable value. The lighter sediments will be suspended, but heavy sediment could create a shoreline. The Corps' trying to move that much material such a distance is hard to believe.
- The Corps has been helpful to those with erosion problems in the past. The Missouri River we have today is not that of our grandfathers. We experience increased erosion when clear water [without much sediment] is released from the dam. This is a lose-lose situation; the river is eroding and there is no overbank flooding. I would hope this study would account for what happens downstream.
- The bottom of the river has eroded 12 feet in 20 years. I had to extend my boat dock six times to keep up with it. I am concerned about further erosion and the amount of water you would need for a flush. It would cause tremendous erosion.
- I sense that this situation is like illegal immigration: we can do a lot with sediment, but if we can't shut the sediment off we'll be in the same boat. We need to crank up the dredges and do something with the sediment.
- The goal of the Lewis and Clark Preservation Association is to let people know what is happening and to keep the area from filling up. We've lost about 15,000 cfs since 1997. I

would like to ask you to “translate” 15,000 cfs into gallons. I think more people can relate to an estimate of gallons than a number of cfs.

- We had a functional dam in Spencer, Nebraska. The public power authority shuts it off once a month. It seems there should be a study of how to rehabilitate the Spencer Dam. The water table level has risen about four feet since the dams went in. It has overbank flooding now. I’m concerned about what will happen when the reservoirs are full and we have to move water out.
- I’m concerned that rates at rural water districts will increase dramatically if this project goes through because they will have to look elsewhere for water while the lake is drained. We have downstream erosion with no bank stabilization now. After years of low flows, opening the dam will erode the banks terribly. It looks like the Corps has taken a very narrow view of how to solve these problems. You’ll eventually say that you only have the studies to do it one way. I hope you have open minds as you proceed. Thanks for taking action; it is needed, but don’t know if this is the right way to go.
- When I farmed we were required to build terraces. The terraces hold in four to five inch rains so it doesn’t erode soil into the rivers. The government paid some of the cost, and I paid some. It was a big task.
- There is an \$861,000 appropriation to study where sediment is coming from above the dam and how to use existing soil conservation programs to reduce the amount of sediment coming in.
- Is there a chance the model will show this won’t work? Or will you “make it work”?
- I’ve heard several comments about a dam on the Niobrara River. This was proposed previously but people decided they didn’t want it. We would see this same problem if we did put in a dam there.
- You mentioned this type of flushing project has been done in Asia. Are there studies or results from the effects of those efforts that could be compared?
- Can you tweak the model to allow increased barge traffic?
- Is this something to flush silt once, or is it an ongoing effort?
- How accurate is the model? Should a model that has never been used be used first on the Missouri River?
- I realize you can’t give us flow or elevation numbers; but I’d like to know how you decided to consider this option and throw the others out?
- How many cross sections are you taking above and below Gavins Point? How far apart are they?
- If flushing is shown to be a good alternative, how will that impact upstream erosion?

- If you go down to Loop Canal, you can see what has been done with the sand. You can create recreational sand dunes.
- Ultimately we will find alternatives and impacts; it comes down to the state and federal governments to do the right thing regardless of science or cost-benefit ratios. We must impact the decision-makers.
- The Corps at one point had a flushing proposal. I protested that because of water intakes. What happened to that?
- As long as you have running water you will have sediment. Sell it for potting soil!
- A friend in Australia, a hydrology engineer, showed me a project where they built flow impediments in the bottom of the channel to catch the sediment and raised the channel bottom. Have you seen anything about that?
- We have a natural, national treasure in this area. We have eagles and cardinals and everything we appreciate, and we worry they won't be here in the future. How do you analyze the potential of losing the river or the quality of life we have here? I hope we speak our minds and protect what we have here. Congratulations to all the masters and Ph.D students from this study.
- It sounds like the consensus here tonight is to keep what we have and not restore the river to what it was. The watershed idea is good to keep sediment out of the lake. Another alternative can put rock into the lake. We have tremendous erosion at Santee. If that were taken care of, I think that would do a lot to help the whole lake mitigate sedimentation. I like the idea of making a usable shoreline.
- I was looking at the aerial photos of the delta and a thought came to mind – wouldn't it be great if you could take a fire hose and wash it down just like I do my driveway? But then sediment would pile up behind the dam – so then what? New problem; dredge or pump it over? The status quo would be the worst case scenario. Improvement would be great. Stop sediment from Niobrara. Build some islands at Springfield. (Written comment)
- A model alone cannot be used on the Missouri River. Models can be wrong! (Written comment)